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Journal of the Society of Arts.

FRIDAY, SEPTEMBER 10, 1858.

NOTICE TO INSTITUTIONS.

The Prizes and Certificates awarded at the Examinations held in May last, have been forwarded to the several Local Boards for distribution.

Copies of the Programme of Examinations for 1859 may be obtained on application to the Secretary of the Society of Arts.

ENGRAVING.

An invention has recently been patented in this country, for preparing the surface of an engraved copper-plate so as to render it capable of yielding a greatly increased number of impressions. It is stated that upwards of ten thousand impressions have been taken from a plate thus prepared. A description of the process will shortly be given in the *Journal*.

ON THE MANUFACTURE OF AUSTRALIAN WINES.

By P. L. SIMMONDS.

The recent samples of raisins and olive oil from Western Australia, and the trade opinions thereon, published in the *Journal*, have drawn my attention to the subject of new colonial products suited for export, and I should have been glad if the long continued efforts of the Society, by the offer of premiums and the suggestions thrown out, had resulted in some greater degree of enterprise and more extensive results among the colonists. Western Australia has, it is true, laboured under many disadvantages of want of labour and capital, and been thrown sadly in the background by the superior attractions of the gold-fields of Victoria and New South Wales, and the mining and agricultural operations of South Australia.

Just fifteen years ago, my friend the late Mr. R. W. Nash, an earnest and devoted friend to improving the old and developing new resources for the colony with which he was identified, established at Perth a Vineyard Society, for the following objects :—

“ To ascertain and preserve the numerous varieties of the grape-vine now in the colony.

“ To introduce all such useful varieties as we do not already possess.

“ To prepare and publish information on the best treatment of the vine, and manufacture of its produce.

“ To encourage the formation of vineyards, and the manufacture of the produce.

“ To obtain periodically from the members of the society such observations as may have occurred to them in the treatment of their respective vineyards, the qualities of their vines, &c.; so that the committee may be enabled to communicate to the public the general results.

“ To obtain and preserve a high character for the wines, brandies, Zante currants, and raisins of Western Australia, by discountenancing the exportation of inferior qualities, and by the society's brand accrediting the superior.

“ To form a model vineyard, where all attainable varieties of the vine should be preserved and propagated,

for the purpose of trying experiments on their treatment, and on the manufacture of the produce, as well under various treatment, as with various combinations of grapes, and from which cuttings should be furnished to the members at a fixed rate.”

At the first meeting, held the 8th June, 1843, a beautiful sample of Zante currants, in their dried state, which had preserved the bloom uninjured, and produced in his own garden, was shown—and much admired—by Mr. Mackie.

And yet, in the long interval that has elapsed, when the suitability of the soil and climate, and its capability to produce grapes, raisins, wine, olive oil, and other important products, have been fitly proved, how little has been really done, in a commercial point of view, either for local consumption or export. While there is little encouragement for the shipment of dried fruit to England, owing to the long voyage and the heavy charges, there are excellent markets at hand, as consumers, in the various Australian Colonies, and in Mauritius and Bourbon. But the colonists seem too prone to rest satisfied with putting the matter of successful production simply to the proof, and then weary of following out the matter in speculative point of view.

A late number of the *South Australian Register* says :—“ We have been favoured with a sample of raisins, the produce of a vineyard at Norwood, which has been dried during the present season. They are plump and sugary, not too much dried, and rich in flavour. If raisins of this quality can be produced here in abundance, and there is no reason to suppose that they cannot, Australian housewives ought not to be long compelled to pay one shilling a-pound for their fruit for puddings. We sincerely hope that this branch of industry may be extended, as well as wine-making and spirit distilling, so that the produce of our vineyards may be turned to the best possible account, both to the growers and to the community.”

It is remarkable that a process so exceedingly simple as that of drying grapes so as to produce raisins, should not be more attended to in the southern colonies for the purposes of trade and commerce.

For this purpose it is only necessary to raise mounds of earth against a wall so as to present a sloping surface towards the meridian sun, at an angle of about 30° or one-third of a right angle. The bare red soil—warmed by solar heat, kept dry, and protected from rain or dew, is considered to possess properties for drying the grapes into raisins preferable to any other sort of surface, or any artificial heat. A useful sized slope is one about 26 feet from the upper to the lower horizontal line, and of the same width. This should be divided into two compartments of 12 feet wide (leaving 2 feet between them) by two planks fixed on edge and supported by stakes and cleats at the lower edge. Down the middle of each compartment should be a central sleeper to support covering boards, which ought to be cleated so as to be kept in their places, and overlap so as to form a boarded roof for each partition. These boards must be lifted on every evening, and taken off every morning, and laid on whenever rain is about to fall. The grapes should be laid down in separate bunches on the naked earthy surface, where, in the space of from six to twelve days, they will become brown; they must then be turned—once turned only—and in from two to three weeks in the whole they will be converted into raisins. In turning the grapes care should be taken to touch the fruit as little as possible. In order to prevent the contact of ants, it will be necessary to surround the basis of the slope on every side with water, which very little ingenuity will contrive without affecting the dryness of the mound.

Few people are, perhaps, aware of the amount of the revenue derived by Spain from this article of commerce alone. The country consuming the most of the raisins thus produced is North America. Next comes England, then France.

Then, again, in the matter of Australian wines, which

would pay well for shipment, or even for local consumption if due attention were but given to the culture, management, and preparation of the wine. We have seen what an impetus has been recently given to Cape wines here, and those not of the best, but cheap colonial wine would always find a market, and take the place of much of the inferior continental wines.

The cultivation of the vine in Australia is as yet only the pursuit of a few wealthy landowners, who carry it on in the spirit of amateurs, as a branch of horticulture. It is more a fancy than an industry; and has not told with any appreciable effect on the taste or commerce of the colony. Hence, though we hear frequently of the wine of Australia, it is all sample and no bulk. It figures prominently in reports, as recently in Paris, and in nearly all the books about the colony: but it has not yet found its way into the ledgers and cellars of "the trade." The few wine-growers of the colony are too easily satisfied with proving that it can be produced, and it must be admitted they have proved it. But the period of experiment in this matter has exceeded all reasonable limit. The work wants a little pushing from the spirit of gain. Industries that potter on in the state of infancy for a generation are apt to be slighted and forgotten; dwelling continually in the region of expectation and promise, they rank at last with the sea serpent and the "coming man." In some such limbo is the wine trade of Australia, and there it is likely long to remain.

The last official return of the number of acres under cultivation with the vine in New South Wales, states it as a little above 1,000—about half the area of a single farm in the colony. Most of the produce is consumed in the establishments of the growers, but much of this small producing power is wasted by their mania for imitating or rivalling the choicest European varieties, and the struggle to obtain identity with them in colour and flavour. If there is any little surplus the public know nothing of it, the growers, as a body, having taken no effectual steps to make it accessible.

One may be long in the colony itself without hearing that such an article exists. The city of Sydney is populous and wealthy, by no means averse to vinous fluids in any form, but indeed rather remarkable among capitals for chronic thirst—the climate conducing thereto. It supports a host of wine agents, wine merchants, and wine firms. Auction sales of wine are advertised daily in the local papers. A transaction of 10 minutes will stock your cellar with the "best brands" of all the wines in the universe, except those of Australia. Nowhere is the wine of the colony to be seen; even to taste it is difficult; it can only be done at a few good men's feasts, or at the houses of the growers. So may the privileged partake of rarities at the Duke of Devonshire's. But it is not an affair of commerce. There is no native wine "in the market," where only the great mass of the public can become familiar with it. There is not a shop, dépôt, or establishment in Sydney where a pint can be bought over the counter. If you were to ask an Australian innkeeper for a bottle of wine "the growth of the country," you would create as much astonishment as if you made the same demand in a Highland boothie.

The only prospect I can see of wine being (in the commercial sense) produced in Australia, is that the cultivation of the grape may, hereafter, be taken up by a class of men who will make it their trade and live by it; who will have the good sense not to imitate Chambertin and Bordeaux, but grow a good pleasant quality, "racy of the soil," rich with its southern sun (such qualities there are), and in larger and larger quantities as the demand increases—in vintages, comprehensive measures—pipes, tuns, and butts—are what the world respects. The small annual "squeezes" that may be gauged by gallons, and only appear in public in sample bottles, are very properly treated as of no account. Let the Australian wine-growers enlarge the borders of their vineyards, cease being too curious in exquisite varieties,

and aim at quantity from the two or three sound stocks they have already obtained. When they have freighted their first half-dozen ships to the London Docks, people will begin to believe Australia is really a wine-producing colony.

A writer, speaking of South Australia, says the grape is destined to become one of the prime fruits of South Australia. It grows with a luxuriance and vigour on all soils altogether unknown in Europe, and produces fruit in miraculous profusion. Every cottager, with no more pains than he would give to a cabbage, may have his vine covering his dwelling in a couple or three years, groaning with this luscious produce, and rewarding, with a generosity unknown to other plants, the small labour bestowed upon its culture. South Australia may be made a wine producing country to any extent, for there is no part of the soil unsuited to the growth of the vine. Four hundred different sorts are in the colony, selected from the best vineyards of France, Italy, and Spain, and the cost of planting and preparing a vineyard would not exceed from £8 to £20 an acre, according to the locality or the soil. From 450 to 1,200 gallons of wine is the produce per acre of a vineyard in its fifth year. An acre is estimated to yield, after the sixth year, a profit of £200 per annum. The grape ripens in Australia in January, and the fruit continues to be gathered till the end of May. Raisins of very good quality have been made from the White Muscat of Alexandria, with no other trouble than cutting off the branches and laying them on m'ts in the sun to dry.

By the latest returns there are about 800 acres of land in cultivation as vineyards in South Australia. There can be no question of the capabilities of the colony for the production of wine. I do not mean a mere *vin ordinaire*, but wines of a superior class. Many of the wines already produced give promise of possessing a distinctive character, together with those qualities which render them most valuable—colour, bouquet, flavour, and strength. Notwithstanding all the difficulties attendant on a process new to most of the growers, and an ignorance of the practical manipulations on which so much depends, there can be no doubt that our wines justify every encouragement being afforded to the planting of vineyards.

Mr. Landor, in his work, *The Bushman*, says, "there is every reason to believe that Western Australia will one day become a great wine country. Its vineyards are becoming more numerous and extensive every year; and the wine produced in them is of a quality to lead us to believe that when the art of preparing it is better understood, it will be found of very superior quality. It will, however, be a new kind of wine; and, therefore, before it will be prized in Europe, prejudices in favour of older wines have to be overcome. Soil and climate combined, give to different wines their peculiar flavour. The vines which in Madeira produced the wine of that name, when brought to another country, even in a corresponding latitude, and planted in a soil that chemically approaches as closely as possible to that which they have left, will produce a wine materially different from that called Madeira. So with the vines of the Xeres and Oporto, of Tenerife, or Constantia. Different countries produce wines peculiar to themselves; and the wines of Western Australia will be found to be entirely *sui generis*. All that I have tasted, though made from the poorest of grapes, the common sweet water, have one peculiarity; a good draught, instead of affecting the head or flushing the face, causes a most delightful glow to pervade the stomach, and it is of so comforting a nature, that the labourers in harvest prefer the home-made colonial wine to any other beverage. Every farm-settler is now adding a vineyard to his estate."

It is worth tracing back the early stages of grape culture and wine manufacture in the Australian colonies for present and future reference and comparison; thus at the meeting of the Hunter River Association, New South Wales, in 1849, Mr. Lang, of Dunmore, produced

five samples of wine, accompanied by an interesting report, which, however, is too long for insertion here at length. No. 1 was a red wine, of the vintage of 1846, made from the black cluster and red muscatel grapes, principally the former. This wine had a considerable flavour of the muscatel, but rather sharp; it was, however, pronounced by the judges to be sound, and free from acidity. No. 2 was a white wine, vintage 1847, made from the Schiraz grape exclusively; this was pronounced to be a pleasant and agreeable wine, of clear yellow colour and pure flavour, and very palatable; it was much approved, and much surprise was excited by Mr. Lang's description of the great produce of these vines this year, no less than 1,800 gallons per acre. No. 4 was a red Hermitage, vintage 1848, of which a sample had also been exhibited at the last November meeting; it had the Hermitage flavour, and was considered a good wine, but had not been allowed time to develop its qualities. No. 4 was a red wine, vintage 1848, made exclusively from the red muscatel grape; this sample had been but recently drawn from the cask; it was a thin wine, of pleasant but somewhat tart flavour; the general opinion drawn forth by it was that the muscatel was not a desirable wine grape, although it made excellent brandy. No. 5 was a white wine, vintage 1848, made from the Verdeilho and small Reisling grape; this sample had also been but recently drawn from the cask, but it was, nevertheless, a good wine, of fine flavour, and considered to be of great promise.

Mr. Carmichael, of Porphyry Point, produced three samples, one a red wine, of the vintage of 1848, made from the Pineau Noir grape; the wine was beautifully clear, and of a rich colour, rather tart in flavour, but a very good summer wine, and without any acidity. No. 2 was a white wine, vintage 1848, Shepherd's Reisling grape; it was of fine flavour, and of a rich golden hue. Mr. Windeyer, of Kinross, sent in a box of samples of three wines; one of which, labelled "black cluster," 1841, was a strong full-flavoured wine, pronounced to be quite sound, and of good body. A general opinion was expressed that the black cluster grape was one of the most valuable wine grapes in the colony. Samples, equally good, were sent in by Mr. King, of Irrawang. No. 1 was a red wine, of the vintage of 1846, made from the black Pineau and gray Pineau grapes, the former in much the largest proportion; this was a first-rate wine, and was by common consent so pronounced, and it was agreed that this wine would sell in the market as the best Burgundy wine, if it had a foreign name attached to it, although the colour was scarcely as deep as good Burgundy. No. 2 was a red wine, also of the vintage of 1846, and was made entirely from the Black Pineau grape; this wine was a deeper and richer colour than No. 1, and was pronounced by the connoisseurs present to be a better and fuller Burgundy wine, having the full flavour, colour, and body of the best Burgundy. Mr. Hickey's sample of brandy, although only ten days old, proved to be a very fine article of pale golden colour, and free from the fiery taste which usually marks the colonial brandy; Mr. Hickey said he could obtain about 180 gallons of such brandy from an acre of vines. Mr. Lang's brandy, distilled in 1848, was then tasted; it was of fine colour and flavour, somewhat fiery when pure, but very agreeable when mixed with cold water.

Sir Thomas Mitchell received the large silver medal offered by the Sydney Floricultural Society in 1849, for the best raisins. At their annual show there were only two sorts of wine exhibited, of which the judges reported as follows:—

"The Society having apportioned to wines the highest prize, in order to encourage the cultivation of the vine, and to bring into use generally the wines of the colony, regret to observe such slight competition.

"Only two samples of wine were exhibited, to the best of which (a white wine, made from the Verdeilho grape, of the vintage of 1848), was awarded the highest prize.

At the same time the judges desire to remark, that the wine of the same class, of the vintage of 1849, possessed qualities which they have reason to believe would next year entitle it to rank with that which has now taken the prize."

There was published in 1856, in this *Journal* (vol. iv., p. 575), an interesting paper by Mr. James King, to whom the Society's silver medal was awarded, on the vineyards of New South Wales. As the subject is just now of even more interest, room may perhaps be found for the following further details.

It would be difficult to find a climate better adapted for the cultivation of the vine than that of New South Wales, or soils more suitable for it than those which everywhere abound upon its coast, particularly from Illawarra to Moreton Bay. The great elevation of much of the inland districts may not, perhaps, admit of such elevated portions producing wine, but they contain, nevertheless, many sites where vineyards would succeed, inferior in this respect as their climate is to that of the coast, if proper vines were selected. There are already many varieties in the Colony, some of which are suitable to cold and elevated sites, as proved by their successful cultivation in some of the best vineyards in Europe. What a source of enjoyment would the growth of the vine be to the inhabitants of Yass, Goulburn, Berrima, Bathurst, &c., did they but avail themselves of the natural advantages of those districts by growing wine for their own consumption. Wherever the climate is warm enough for the early or dwarf varieties of maize, wherever the peach or the fig ripen without the assistance of walls, there the situation would prove warm and sheltered enough to mature the fruit of the vine.

Site.—The best sites are the sides of gently-sloping hills, sufficiently elevated above the valleys or plains to be beyond the influence of hoar frosts in spring, and the chill humid exhalation occasionally prevalent in such situations. The first, not unfrequently in a single night, frustrates the hopes of the cultivator by cutting off the young shoots, and the last greatly retard the vintage. Experience in this branch of colonial husbandry shows that a vineyard on the side of a hill, at an elevation of one hundred to one hundred and fifty feet, will usually be three weeks or a month more advanced than vines in a like sort planted in a valley or plain at its foot.

Aspect.—The most favourable aspects for the vine in New South Wales, are those from east to north, and in the colder or more elevated regions, even round perhaps as far as north-west, but sheltered as much as possible by the ground or by thick wood from the south-south-east, round to the north-west. It is difficult to meet with a site comprehending every advantage, but the great object is to have the vineyard open to the full range of the meridian sun, without being exposed either to hot winds from west to north-west, nor to any of the strong land winds usually more or less prevalent in the spring. It is not advantageous, however, to have any sheltering wood within thirty or forty yards of the vineyard, unless it be a low hedge or shrubbery of moderate height.

Meteorological Influences.—The state and temperature of the atmosphere, at certain seasons of the year, are of great importance to the vine. In New South Wales, abundant rains during the latter part of the autumn and winter may be considered favourable, so also is occasional and moderate mild rain, until the fruit begins to swell to maturity. In the spring, as already said, the great evil to be guarded against is hoar-frost, which in low situations sometimes occurs late in the year, even in the neighbourhood of Sydney, but more frequently in the adjoining inland counties. The damage which these frosts occasion may be prevented in the following simple mode:—Small heaps of straw, rather damp, and mingled with a few shovels-full of loose earth, should be placed round the vineyard, at intervals of six or eight yards, and, if it be extensive, along some of the intersecting cartways. A dray-load of this short straw may be divided

into from twenty to thirty heaps. If the thermometer and the appearance of the weather overnight indicate the possibility of frost, a vigilant look-out should be commenced an hour or two after midnight. As soon as the thermometer approaches the freezing point, or falls a little below it, some heaps of the straw, say every sixth or eighth, should be lighted, and each so managed as to be kept mouldering for about an hour. The dense smoke produced is prevented from rising or dispersing by the weight of the atmosphere. As the straw burns out, fresh heaps should be lit, and care taken to reserve a sufficient number to occasion the densest smoke at sunrise and for an hour after. By adopting this precaution, the dew is prevented from freezing on the young shoots of the vine, or when frozen, they are not acted upon by the sun's rays, until thawed by the slowly-increasing warmth of the atmosphere.

With a little attention, the vine may, at no distant time, be extensively cultivated in Australia, and when that takes place, it will have a greater effect in inducing habits of sobriety than all the efforts of teetotal and temperance societies combined. Communities of vine growers are rarely intemperate in the use of fermented liquors, although, in the aggregate, they largely consume the produce of their own vineyards. Independently of this advantage, there can be no doubt that as soon as vineyards are extensively cultivated in Australia, vines will be produced rivalling the more famous growths of Europe, but until experience and skill have been acquired in the art, and the multiplied attention of individuals has been directed in this channel, it is not to be expected that wines should be produced of a quality sufficiently good for exportation. Considerable quantities of wine, and some of it of a superior kind, have already been made in New South Wales. Indeed, the ease with which the colonists generally may derive advantage from their own vineyards, is to be gathered from the fact that for some years past five and sometimes six individuals have been daily supplied at one estate in the colony with one pint of wine each, the produce of a single quarter acre of vines, forming part of an extensive vineyard. By the time these vines were in full bearing, they did not cost the sum of £15, including the original value of the land, and every outlay, with interest at ten per cent. The annual expense of cultivation, with the management of the vine included, did not exceed £5. Thus, for a sum not exceeding twenty-five shillings annually (less than one penny per day) may every colonist be daily supplied throughout the year with a sufficient quantity of sound wholesome wine. Of this description of wine, an acre of land in New South Wales will produce from 1,000 to 1,200 gallons, and about half the quantity of superior wine.

The following estimate of the profits of wine-making in New South Wales, was furnished me by a correspondent a few years ago:—

| <i>Expenses in making a Vineyard of 20 Acres in N. S. Wales.</i> | |
|---|--------|
| Clearing, stumping, and levelling 20 acres of forest-land, at £5 per acre | £ 100 |
| Trench-ploughing ditto | 40 |
| Fencing a 4-rail fence, and carting for ditto Stakes for 50,000 plants, one to each plant, 5½ feet long | 40 |
| Planting cuttings, preparing and procuring them, driving in the props, and carting manure, if any is used | 70 |
| Cellar and premises to make and keep wine in Tools, vats, horse and cart..... | 300 |
| Add expenses for two years after-planting, before the vines bear:— | |
| One gardener, or vine-dresser £100 | 340 |
| Eight labourers, at £30 each 240 | |
| Interest on the above outlay, at 10 per cent. | 120 |
| To cost at the end of two years..... | £1,185 |

If trenched with the spade, 30 inches deep, add £20 per cent. per acre more.

Annual Expense of Cultivating Twenty Acres, after the Second Year.

| | £ |
|---|-----|
| One gardener or vine dresser | 50 |
| 4 labourers all the year, including coopering... | 170 |
| Extra labour during vintage | 50 |
| 50 new wine-pipes, at 30s. each (old ones will be procured for years at 7s. each) | 75 |
| Tear and wear of tools, apparatus, premises, &c. | 20 |
| Interest on outlay incurred during the first two years, at £10 per cent. | 118 |

Annual expense

Annual Returns from Twenty Acres.

| | |
|---|--------|
| Produce of 20 acres of vines, taking the average of all the vineyards in France, being 250 gallons per English acre, 5,000 gallons at 4s. per gallon, casks not charged | £1,000 |
|---|--------|

Annual income

£1,000

This estimate shows a profit of upwards of a hundred per cent. on the culture of the vine in Australia.

"A Vine-grower" gives the following as the estimated cost of cultivating an acre of land for the growth of grapes:—

| | £ |
|---|----|
| Trenching and clearing | 40 |
| 3,000 plants, at £2 | 6 |
| To set 100 plants per day, 30 days, at 8s., without rations | 12 |
| To fence and rail an acre | 51 |
| Labour and management, £30 a-year, 3 years | 90 |

Total.....

£199

After standing three years, this vineyard will produce 400 gallons wine, on an average 10s. per gallon—£200, and about £50 worth of grapes, leaving a profit of £51. The profit of the fourth year will increase to double, and average more every succeeding year.

Even in Victoria, with all its paramount gold digging attractions, and the turmoil of business and trading operations, the vine is making some little progress, for we learn from the statistics that in 1854, there were produced in a portion of the county Grant 9,100 gallons of wine, 100 gallons of brandy, and 80,580 lbs. of grapes were sold. In 1855, 6,000 gallons of wine were manufactured on Belperoud's vineyard, and about 2,000 gallons on Pettaval's, 200 gallons on a very small vineyard at Fyan's Ford, being upwards of 8,000 gallons from those vineyards only, but were Brequet's and other important vineyards calculated (so far as their wine produce is concerned) with the above-mentioned ones, a total of from 16,000 to 20,000 gallons might be set down as the year's return of native wine; and, great as the quantity appears this season, should the weather be propitious, which at present is the case, a great increase will be made in the number of gallons produced last year.

Sir W. Denison, when Governor of Van Diemen's Land, took some pains to obtain information calculated to be useful to the wine makers of the Australian colonies. From these hints, contributed by Mr. T. C. Banfield, and published in the *Hobart Town Government Gazette*, I take the following:—

One great source of expense attending the cultivation of the vine in Europe, is caused by the care required to make the grapes ripen. Even in the Tokay vineyards of Hungary, and in Italy as far south as Rome and Albano, the vines are cut low, are carefully staked, and cleared at stated times of the superabundant foliage which prevents the sun's rays from warming the ground in the ripening season. The reflected heat is used like that from a wall, and is more looked to than the direct

action of the sun's rays, under which the grapes often burn up.

A great deal of labour thus expended, together with the cost of staking, may doubtless be saved in warmer latitudes, where hands are not abundant, but the climate allows the grape to ripen without nursing. In such countries, fine wine, being a valuable exportable crop, is most desirable for the land-owners.

The average produce of an acre of grapes in Europe varies from 1 to $1\frac{1}{2}$ pipes on the Rhine, to 2 and sometimes $2\frac{1}{2}$ pipes in southern France, Hungary, and Italy.

The value of wine is not, however, inversely as the yield, since the finest Rhenish wines sell not unfrequently for £200 per pipe, while £50 to £70 is considered a high price for choice clarets, ports, and sherries. It is not an uncommon thing to have 25s. per bottle charged at a London tavern for Rhenish wine of superior but not of the best quality, which is at the rate of £760 per pipe. The consumption at this extravagant rate is, of course, limited; still, consumers are found, and this circumstance indicates how large a field is open to the industrious wine-grower.

The soil best suited to the growth of the vine has occupied a great deal of attention. The experience of Europe shows that the vine thrives in nearly every kind of soil, and that it is of more importance to choose a fresh broken soil than to select one of any particular composition.

In the following table, the nature of the leading vineyards is stated:—

| NAME OF WINE. | COUNTRY. | ROOKY SUBSTRATUM. | SOIL. |
|----------------------|-----------------------|-------------------|--|
| Tokay ... | Hungary. | Volcanic. | Alluvial. Tufa and alluvial. Tufa. |
| Auvergne ... | France. | Ditto. | Ditto. |
| Lacryna Christii ... | Vesuvius. | Ditto. | Ditto. |
| Monte Pulciano ... | Roman States. | Ditto. | Ditto. |
| Johannishberg ... | Rhine. | Ditto. | Ditto. |
| Steinberg ... | Lower Douro. | Ditto. | Ditto. |
| Hochheim ... | Rhine. | Ditto. | Ditto. |
| Port ... | France. | Port. | Ditto. |
| Liebfrauenmilch ... | Wurzburg, in Bavaria. | Liebfrauenmilch. | Red sandstone. |
| Bordeaux ... | Bavaria. | Bordeaux. | Rock decomposed. |
| Steinwein ... | Rhenish Bavaria. | Steinwein. | Ditto. |
| Hardt ... | | | Ditto. |

From the above list, it appears that a great variety of soils can yield superior wines; and we are by this circumstance confirmed in the notion that success depends more upon the treatment of the juice after it is obtained, than upon the soil on which the grape is raised.

The vine is a plant which very much exhausts the soil. It has a tap-root throwing out feeders at the side, which admit of its being nourished from manure buried at some distance from the plant. This circumstance is of great importance to the vine grower, in countries where land is not at a very high value, since it facilitates the use of the plough instead of the hand-hoe now employed to turn over the earth in the costly vineyards of

Europe. The rows of vines are easily kept far enough apart to allow a bullock to draw several furrows between them, without injuring the vines. The furrows should be eight or ten inches deep, and one in the centre might be made still deeper, into which the manure should be thrown.

The vine ought not to be allowed to form too much wood, but should be cut annually, so as to leave but a few shoots on each stalk.

In many parts of the Rhine, staking in is altogether dispensed with, and the vines are trained as low standard bushes, resembling currants. By adopting this plan, much expense is saved to the planter.

The kind of grape to be selected is matter of experiment, and the number of sorts from which good wine is obtained is almost as great as the variety of soils. The highest priced wines upon the Rhine are made from a small white grape, called "Riesling," which is an abundant bearer, and has a fine flavour. The aroma of the Muscatel grape is more powerful in the fruit, but it is not so powerful in the press, nor is it so durable in the wine as the simple delicate flavour of the "Riesling." A large white grape produces delicious and powerful wine at Rudesheim, where it is said to have been perpetuated from Charlemagne's time.

The small black cluster grape, of Burgundy, is much in use upon the Rhine, in Hungary, and in Southern Europe generally. It is to be feared, however, that the French red wines are to a great extent artificially flavoured, for which purpose peach-leaves and kernels are much resorted to.

A large black grape, and also a white variety of the same kind, were much spread in Europe by the Emperor Probus, who exerted himself to improve the production of wine in the Roman Empire, with great success. The grape is found at Tokay, Malaga, Bronte, Lisbon, and Madeira.

By far the most important subject for the consideration of the wine-grower, is the proper fermentation of the juice obtained from the ripe grape.

Fermentation has several stages, as both the brewer and scientific wine-grower well know. According to the stage at which the process is arrested, the liquor obtained differs in nature; the two extremes being wine and vinegar.

The stages may be classed in the following order:—

1. Vinous fermentation.
2. Spirituous fermentation.
3. Acetous fermentation.

By fermentation in the first stage, a quantity of the sugar contained in the grape-juice combines with the oxygen of the atmosphere, and forms alcohol, which transformation is accompanied with an escape of carbonic acid gas, and a separation of the fibrous matter from the pure liquor,—the fibres, &c., forming what is called lees.

The difference between the vinous and the spirituous fermentation consists in the moderate degree of working which is required to make the wine. The wort should never ferment so strongly as to allow a rapid and violent escape of carbonic acid gas, otherwise both the flavour and alcohol escape with it, and the wine is left tasteless. A great deal of flavour can escape in this manner with comparatively little alcohol, and the wine may thus remain strong, but flavourless. This is the case in the greater part of Southern Europe; and hence the necessity for resorting to artificial flavours, which, although now managed with skill, are far inferior in every respect to the natural flavour of the grape.

A slow process is essential, therefore, to a perfect vinous fermentation. This must be ensured by the choice of a cool cellar, and by protecting the must from the too rapid action of the atmosphere.

There is no real difference between what we have called "spirituous fermentation" and distilling, except that, in distilling extraneous heat is applied to quicken the process, and drive off the alcohol, which is caught in

the receiver. In fermenting, the temperature of the mixture is raised, but the alcohol engendered is not immediately driven out. It has a tendency to escape with the carbonic acid gas, and in a warm room soon evaporates in an open vessel. When more alcohol has escaped than is necessary to preserve the sugar and other ingredients contained in the grape-juice, the third stage or acetous fermentation commences, and we obtain vinegar.

The wine-maker's attention should, therefore, be concentrated on the first stage, or that of the vinous fermentation. He must seek to preserve the flavour and the strength—and in so doing he will preserve a pleasant degree of sweetness.

The flavour in the grape lies in an essential oil, which is enveloped at the same time with the saccharine matter in the ripening berry, and which has its seat immediately under the skin. For this reason, the manner of bruising the grape is not a matter of indifference, and after many attempts to invent mills for crushing, the wine-growers have returned to the old method of treading; large leather boots, armed with nails, are kept for this purpose at most of the large wine establishments on the Rhine. The bruised grapes should be filled into horse-hair bags, when white wine is made, and placed in the presses, the juice flowing from which is immediately put into pipes or double pipes, standing on end, and furnished with a very simple and inexpensive apparatus, which ensures the preservation of both flavour and spirit, if the temperature of the cellar be kept moderate. This is no other than a small tin tube, $1\frac{1}{2}$ inches in diameter, inserted into the barrel, near the top, and projecting from it three inches, when it turns down about as much, offering the means of plunging it into a small bowl of water. The water absorbs the carbonic acid gas as it evolves, and discharges it, when charged to excess, into the atmosphere, without allowing any escape of flavour or of alcohol.

By this simple and inexpensive precaution, the finest and strongest wines may be made without any addition of brandy. But the process is rather slow. The wine may be racked off four times in the course of the first year, and twice in every succeeding year; but it is needless to keep it in casks furnished with the tube after the first racking, the proper time for which is indicated by the cessation of all escape of carbonic acid gas through the tube.

The process of ripening is one of slow fermentation carried on in the cask, which absorbs the carbonic acid gas, but likewise without injury to the flavour. The period when the wine can be sent to market or shipped, depends on a nice adjustment of the balance between the alcohol evolved, and the quantity of sugar contained in the wine. Of course, the balance is not established until alcohol enough is developed to preserve the other ingredients.

Wines in which this balance has been destroyed by loss of alcohol, in consequence of too rapid evaporation, must be brandied, to make them stand the voyage,—a process which is wholly unnecessary if the directions respecting the fermentation here given are punctually followed.

8, Winchester-street, S.W., Sept. 4.

SMALL PARCELS POST.

The Secretary has received the following communication from a Postmaster in one of our principal towns:—

SIR,—With reference to your letter of the 10th ult., enclosing a copy of the Report of the Committee of your Society upon a Parcel Post, I beg to say that I had already come to an independent conclusion in favour of such a project.

No doubt the introduction of parcels disturbs the natural action of the Post-office, which is intended for letters only. But inasmuch as we have always carried newspapers, which are nearly as awkward as closed parcels

would be, we have not been entirely confined to letters. Newspapers, and the generality of book parcels, are not things of intrinsic value. The Post-office does not profess to carry parcels containing value. It allows such things, because they come under the denomination of letters. The Post-office, moreover, provides, by registration, for the security (to a certain extent) of such letters as the public wish to be secured. When a person comes to complain that a letter containing value is lost, our answer is that such things should not be sent. But if we invite the public to send such things the same answer cannot be made. We should not have induced the sender to trust the department with his parcel without taking reasonable means towards securing its safety. The question is,—whether we should not aggravate the great standing blot of the penny post by increasing the quantity of things worth stealing? I am inclined to think not. First, because the great majority of real losses are of coin—coin ineffectually concealed. If a parcel of four ounces can be sent for a penny, a parcel containing a sovereign need not be known from a sample of goods; and I can trust the Society of Arts for inventing light and strong boxes of various sizes for sending all sorts of lawful articles. In the next place we could separate to a great extent the letter post from the parcel post, so that a lost parcel would not be harder to trace than at present. Still, notwithstanding the inclination to favourable anticipations, it is not impossible that the present scandal, disorder, and expense may be increased. Now, it has struck me that a parcel post could be so constituted as not only adding to the public convenience, but as supplying the means by which the penny post might be relieved from the evils which the present partial and incidental transmission of parcels has entailed upon it. I should say, let us distinguish between letters and parcels. Let us say (for instance) that a parcel is a closed packet, not consisting of or containing paper only. The absence of other things, and especially coin, can be ascertained by perforating the letter, and even the seal, in suspected cases, with a very thin awl. Parcels (excepting bank notes in envelopes, posted as letters) would then be distinguished from things of no intrinsic value. What shall we do for their safe transit? Registration (which does not ensure absolute traceability) by giving and taking receipts is too cumbersome. But can we not adopt some system of check? The main use of registration consists in knowing the precise stage where the letter disappears. Few would attempt (and none could continue) to abstract parcels, if immunity from suspicion be narrowed to such a point. I think this might be accomplished by a more simple practice than that of registration. The officer who takes in parcels or unlocks the parcel box, might take and send an account of all parcels despatched, and the delivering office might keep a list of all parcels given out for delivery. It is unnecessary now to go more into detail. As this would add to the work, we must provide for the expense.

I find the tradesmen of this town would gladly give 6d. per pound to send parcels everywhere. It is said by your Committee that they can be profitably carried at 4d. per pound. Before this is decided upon, it should be remembered that the postage now paid on parcels will be lost to the Revenue. The report calculates on the Letter department paying as much as it does now. It will also be proper to ask whether, if a rural postman is overloaded with parcels, the rate of 4d. would pay for a supernumerary messenger? All that is now over his regular Post-office load, and not more than his strength, is profit to the Revenue. But is a halfpenny per pound (especially for a light load) enough to pay an extra messenger? Mind, I am not prepared to answer in the negative; I only raise the question. With town letter carriers, we should get a decided advantage over the present system. The letters would be delivered by one set of men, and the parcels by another. Letter-delivery in town suffers delay at present, from the packages with which the letter-carriers are loaded. A registered letter

too, is a very hindering thing. If letter-carriers had only common letters, they would get round their walks much quicker. The parcel carriers, with somewhat less speed, would take their parcels in light wheelbarrows, with covers that could be secured when left at the gate of a garden, in front of a terrace, &c. Then, again, with respect to the mail-cart service, those carts which carry London bags, might, in some cases, want two horses instead of one. But with cross-posts this would scarcely be the case in any instance, as they seldom carry heavy weights. I could exchange parcels with half this county, all the next, and part of another, without using the railway at all, and, I think, without any increase to the cart service.

Supposing, however, that the rate for transmission be fixed at 4d. per pound, I propose that 2d. be added to, and included in, the charge for each parcel, for the purpose of providing a check upon its exposure to loss. Let the charge be 3d. for the first quarter of a pound, and a penny for every additional quarter of a pound.

The following would give a simple and comprehensive table of the rates of inland postage:—

1. A closed packet or envelope, not containing nor consisting of paper only, 3d. for the first quarter of a pound, and 1d. more for every additional quarter of a pound, or fractional part of a quarter.

2. A closed packet or envelope, containing and consisting of paper only, if it does not weigh more than a quarter of a pound, may be sent for 2d., and if not more than half an ounce (I should prefer an ounce), it may be sent for 1d.

3. An open packet, containing paper only, may be sent at the rate of one penny for every quarter of a pound, or fractional part of a quarter of a pound it weighs.

It would be a very great thing if the Post-office robberies could be stopped. The advantages of the penny post are justly appreciated by the public, but I am often led to think that they are purchased at a high rate, when the number of artificial criminals which it has made is taken into account. I feel persuaded that the Society of Arts does not regard the conveniences of life as outweighing considerations of humanity, not to mention the credit of a public department, or the no inconsiderable amount of loss sustained by individuals of the general public.

I am, &c.,
"A POSTMASTER."

DISINFECTION OF TOWNS, SEWAGE, AND SEWERS.

The following communication has been addressed by Dr. R. Angus Smith, F.R.S., to the editor of the *Practical Mechanics' Journal*, bearing upon the subject of his paper read before the Society last year:—*

I beg to send you a proposal by Mr. Alexander M'Dougall and myself, for the disinfection of the sewage matter of towns,—a subject to which public attention has lately been most strongly aroused by the arrival of hot weather. We deal, of course, with the chemical part of the question; and we know well that our plan produces complete disinfection, and not mere deodorisation, which, however, is either total or partial disinfection. We propose to apply the disinfecting material by allowing it to flow into a pipe which shall intersect all, or the chief sewers at their highest part. The sewers will in this way be disinfected throughout, and the towns, of course, will receive the benefit. We have other modes of completely disinfecting the streets and courts, by putting some of the material used in the water carts, for example. The whole system will produce an amount of purity not before seen in towns. We have already given our plans, perhaps not so fully as may be required for

any one particular town, but in their general bearing, to the Town Council of Glasgow; and we understand that Mr. Bateman, the engineer, and Dr. Anderson the chemist, are requested to report upon them; but we have not been desired to give the gentlemen the results of our experience. This, however, will no doubt be arranged before a final report.

The proposals which have hitherto been made for dealing with sewage are chiefly of two kinds. The first removes the sewage as rapidly as possible on to the land in the vicinity of the town, and a system of manuring by irrigation is carried on without interruption through the year. The distribution of the sewage on the land is effected by various methods. The second operates upon the sewage after it has left the town, and converts the matters obtainable from it into a portable manure. Circumstances will determine where one or other of these processes may be adopted with advantage. We propose to deal with what is, in fact, the most urgent necessity of the case, and to add a provision to be adopted with either plan for preserving the air of towns from pollution by noxious emanations from putrid sewage. This we propose to accomplish by acting upon the sewage, so as to disinfect it in its passage through the town. Offensive effluvia from sewers have hitherto been dealt with mechanically; stench traps and similar means of obviating the evil have been found imperfect and unsatisfactory in their result. They have proved to be an apparatus difficult to wield in sufficient force to make them a part of a perfect system. Our plan is to act upon the sewage as soon as it enters the sewers, by a continuous current of disinfecting material, so as both to remove its offensive smell and to arrest the further generation of noxious gases; the result will be that the atmosphere of the sewers themselves will be preserved in a state of comparative purity.

The substances we propose to apply are such as have been found to be efficient by extensive use, viz., sulphurous and carbolic or phenic acid. Hitherto we have used these substances in combination with lime and magnesia, and have found them remarkably efficient as a disinfecting powder—(Mr. M'Dougall's Disinfecting Powder).* In using them in cases where it is needful that a flow of water should receive no interruption, such as in a sewer, we do not propose to add the basis, or at least in very small quantity. The substances used are known to destroy noxious exhalations and to arrest decomposition. Our own experience with them has been so varied and extensive, that we have not the slightest doubt of their efficacy. We believe that science has not made known to us any other substances so well adapted for the purpose. The sanitary condition of towns is necessarily the first consideration—the economical application of the refuse, though secondary, is not unimportant; and on this ground also the materials we propose to use are the best that could be employed, as they preserve the substances to which they are applied unimpaired for the purpose of manure. In other words, the manure is kept pickled and ready for use, and after a long period is found to be undiminished in value. This follows from the fact that the decomposition of the sewage, and the exhalation of its valuable products, are prevented.

Those who advocate the precipitation of sewage and the manufacture of solid manure, will no doubt appreciate the advantages of this plan, as it delivers to them the sewage matter uninjured; and they will be able to obtain a much more favourable result than can be hoped for from sewage which has become putrescent, and consequently deteriorated.

The advocates of liquid manures will also appreciate the advantages resulting from this plan; they will obtain the manure in its fullest strength and in a scutless condition to apply to the land. Its use in irrigation will be

* See *Journal*, vol. v., p. 333.

* *Journal of the Society of Arts*, Vol. v., p. 333; *Practical Mechanics' Journal*, Vol. ix., p. 246.

as inoffensive as pure water, thus obviating one of the great objections to the system.

The greatest advantages of the plan we propose are to be found in the towns themselves, where disinfection will be almost universal, and, with reasonable care on the part of the inhabitants, putrescent sewage will be unknown. It certainly has been said by the advocates of the exclusive use of liquid manure, that when it is carried rapidly away it can give no offence, as it is put upon the land before it can be decomposed. It has not been our fortune to find manure so entirely free from odour, neither has our experience shown that it can be put upon land without giving offence, unless previously deodorised.

It is our opinion that 2lbs. of sulphurous acid and 1oz. of carbolic acid, will be sufficient to disinfect the excretions of 300 persons for one day. This will cost about a penny, and the cost for a city of $2\frac{1}{2}$ millions of inhabitants will be about £12,675 per annum, or for every 100,000 inhabitants, £50.

The cost of the plant required at each station where the disinfectant is prepared, will be about £500. The services of a man and a boy will be sufficient; the number of stations required will depend much upon the contour of the site of the town, and will require the consideration of the engineer. The number for London will not be great, but the £12,675 includes the cost for the whole population. We believe that after the sewers have been thoroughly cleansed, a much smaller quantity than we have named will be sufficient for keeping them in a condition of comparative purity. It is ascertained that the disinfection is more easily accomplished when the faeces are acted upon at a very early stage. It will be economical to manufacture the disinfectant near to the highest part of the sewers; these we propose to connect with the vessels in which the solution is prepared, the regulation of the quantity being under the control of the attendant. There are many particulars connected with the manufacture and use of the disinfectant which it is unnecessary to introduce here; they have been obtained by extensive experience, are simple and of easy application.

We believe the following advantages will arise from the method proposed:—

I. The purification of the sewers and disinfection of the town. This is a proposal entirely new in dealing with sewers. No one, as far as we know, has previously attempted the prevention of smell in the sewers themselves. It has indeed been asserted that the sewage can be removed from the town so rapidly, that there is no time to allow of decomposition. Granting the possibility: How rare is the fact!

II. This system can be applied where precipitation is used. The disinfected sewage passing through the town will be preserved without loss of manurial ingredients. It can be precipitated as readily as if it had not been disinfected, and the product obtained will be of greater value and increased in quantity by the amount of matter preserved, when an unexceptionable method of precipitation is arrived at. The inconvenience of leaving large accumulations of putrid matter outside the town will be removed, as there will be no fear of putrid exhalations from the mass, or from the liquid whilst it flows through the drains, even if they should be left uncovered.

III. This system can be applied where precipitation is not employed. The disinfected sewage may be allowed to pass through peopled districts and properties, where the passage of putrid sewage would be highly objectionable. Under this system it may flow without giving offence to any one, and may be used in irrigation with greater advantage to the crops, and without in the slightest degree polluting the atmosphere. Experiments at Mr. Chamberlin's showed that liquid manure laid on the land caused a nuisance so great, that the neighbours resorted to legal proceedings for its removal; but when disinfected by the method proposed, no unpleasantness was perceptible.

IV. The expense of covered channels outside towns will be avoided. If, for example, the proposal of taking

the sewage through Essex were adopted, a covered channel would be rendered unnecessary by this method, although indispensable without disinfection.

V. In cases where the sewage is discharged into a river, it will prevent putrid emanations from the surface of the water. This would remove one of the most obvious causes of offence for sewage, and would apply to the Thames at London.

VI. The expense for all London will probably be under £13,000 per annum,—a sum which can only be considered as trifling in comparison to the advantages to be obtained.

Manchester, August, 1858.

SILKWORM.

M. F. E. Guérin-Méneville has lately laid before the Academy of Sciences in Paris an account of a new Chinese silkworm, which he states is properly the *Bombyx Cynthia*, and which he distinguishes from the *Eria*, with which it has hitherto been confounded.* He says:—

"On the 5th of last July, I had the honour of presenting to the Academy some living butterflies of the new silkworm, which I had endeavoured, without success, to introduce into France last year, as well as some fertile eggs which they deposited. I now exhibit some caterpillars of this important silkworm, together with the first cocoons that I have obtained; and, with the permission of the Academy, I will read a short extract from a paper I have drawn up on the subject:—

"The result of my labours is that the silkworm of the *Aylanthus glandulosa* of Japan is the true *Bombyx Cynthia* of Drury (1773), represented for the first time by Dabenton the younger, in his coloured plates (1760 to 1765), and cultivated for ages past in China, where its silk forms the clothing of the whole population of some districts. Roxburgh (in 1804) believed that the *Eria* worm,† which is cultivated in the East Indies, belonged to the same species; and the confusion, which it has been impossible to set right for want of materials, has lasted up to the present time, so that everyone has called the *Bombyx Cynthia* the *Eria* worm, also named the *Arrindy-arriis* in Hindostan, which is in reality a different species, and lives principally on the castor-oil plant, producing as many as seven generations in the year.

"From the experiments which I have made in the breeding of these worms, I am now able to point out differences in the caterpillars, in the cocoons, and in their habits, which enables me to distinguish them far better than can be done by the slight difference found in the moths, which would only have led observers to imagine they were simply local varieties of one and the same species. The products of those two worms are very nearly the same. The carded cocoons afford an excellent material from which, in China and Bengal, a very strong fabric is manufactured. 'In China,' says Father d'Incarville, 'these silkworms of the ash (he had supposed the *Aylanthus* to be an ash) are a source of riches. The silk which they produce is of the colour of unbleached linen, lasts double the time of other silk, and does not easily spot.'‡ The material is common in China, where it is known by a name which distinguishes it from the ordinary silk and from the other wild worms.' Thus Father d'Incarville says:—'They make the *tsiao-kien* from that of caterpillars of the ash, &c.' In Hindostan,

* See *Journal*, Vol. ii., pp. 247, 263, 603, 835.

† *Transactions of the Society of Arts*, Vol. lii., p. 208.—En. J. S. A.

‡ "Clothes made of this wild silk are not injured by rain, dirt, nor oil."—Stan. Julien, *Résumé des principaux traités chinois*, &c., p. 174.

the thread which is obtained from the castor-oil silk-worm is not less useful and common. 'The fabric which is made of it is of a loose texture and coarse, but it lasts an incredible length of time,' says Roxburgh, in conformity with Atkinson, and this assertion is confirmed by the most recent accounts.

"It is clear that the introduction of the true *Bombyx Cynthia* from China is now accomplished, and it only remains to develop this new industry, which is simply a question of money. All that is required is to raise plantations of the *Aylanthus*, a tree which is extremely easy of growth on the very worst soils, to cover them with the cocoons in the spring which have been hatched in the month of May, leave them to eat the leaves, protecting them only from birds, guarding them by some invalid workmen, incapable of any harder employment, as is done in China. At the end of June the first harvest will take place, followed immediately by a second in August. The cocoons required for stock will remain without hatching till the following May, which is not the case with the castor-oil silkworm, which continues breeding all the winter, requiring either the castor-oil plant cultivated in the greenhouse or the teasel."

"I shall consider myself well repaid for my exertions, if my labours shall result in the establishment of a new industry, which shall render the use of silk as common in this country as in China."

ELECTRIC TELEGRAPH.

Marshal Vaillant, Minister of War, lately addressed a letter to the French Academy of Sciences, requesting their advice whether the passing of the wires of the electric telegraph in the neighbourhood of powder magazines might not become a source of danger.

The question was referred by the Academy to a committee of the following gentlemen:—Messrs. Becquerel, Regnault, Despretz de Senarmont, Marshal Vaillant, and Pouillet as reporter.

The committee has just presented the following report, which has been unanimously adopted by the Academy:—

"It may be taken as certain that the electric currents passing through the wires for the ordinary despatch of messages can in no way be the cause of accidents; for, supposing that the wires became broken from any cause whilst a message was passing, the small sparks which would take place at the point of rupture would be insufficient to set fire to any powder which might happen to be deposited even on the wires themselves or the supports.

"It is, however, otherwise as regards atmospheric electricity. Its action is often formidable, and it would be an imminent cause of danger to the powder magazines.

"If, for example, the lightning should strike the wire, it is probable that it would be fused for a certain distance and dispersed, and that incandescent globules driven to a distance by the explosion, might be carried still further by the force of the wind; besides, the loose ends of the wire in a state of combustion, and driven by the same causes, would not fail to describe large curves round these points, and carry fire to great distances.

"If this be a probability, or simple possibility only, it is not the less necessary to place the powder magazines out of the reach of such a danger."

After having considered the different precautions to which recourse might be had, the committee gives the following directions:—

"1st. To use subterranean wires for that portion of the line which passes at a distance less than 100 metres from the magazines.

"2nd. To lay the subterranean pipes for the wires at such a distance that they will be in no danger from the employment of the workmen either in laying the line or in repairing it.

"3rd. To fix one or more lightning conductors on poles 15 or 20 metres high in the neighbourhood of the

subterranean pipes, so as to protect them throughout their whole length against any direct action of the lightning.

"We ask the Academy to approve of these regulations, which appear to us to afford sufficient security for the War Department without imposing too much on the telegraphs."

SOUTH KENSINGTON MUSEUM.

During the week ending 4th Sept., 1858, the visitors have been as follows:—On Monday, Tuesday, and Saturday (free days), 3,875; on Monday and Tuesday (free evenings), 5,289. On the three Students' days (admission to the public 6d.), 595; one Students' evening, Wednesday, 123. Total, 9,882. From the opening of the Museum, 581,440.

Home Correspondence.

EXHIBITION OF 1861.

Sir,—The Exhibition of 1861 should comprise under one roof, but in separate rooms, first, the marvels of art, and secondly the productions of industry.

The success of the Paris Exhibition was a good deal marred by having separate buildings.

An early decision as to where and when the Exhibition should be is most desirable, for we are now drawing towards the autumn of 1858.

I am, &c.,
PHILIP H. HOWARD.

EXHIBITION OF 1861.

Sir,—I am extremely sorry to find, from an extract in your *Journal* of Saturday last, that the idea of holding the proposed Exhibition of 1861 at Kensington Gore should be advocated in so respectable a journal as the *Builder*. The inconvenience of the site of the Great Exhibition of 1851 was only partially counterbalanced by the entire novelty of the undertaking, and I believe that those who saw and considered the amount of inconvenience and loss, in time and money, that accrued to the public, from the want both of railway and river, were astonished beyond measure that so many people should have reached the Great Exhibition, and would not have the slightest hope that any subsequent Exhibition could possibly pay under such a drawback.

It is to be regretted that the writer in the *Builder* has not given some reasons for his preference for Kensington over Battersea, instead of resting upon the assertion that the site belonging to the Commissioners is "specially marked out" for the purpose. It seems to me that a preference in favour of the Crystal Palace at Sydenham would be equally forcible.

The place "specially marked out" for the Exhibition of 1861 is that which can be most conveniently reached by the masses. Now Battersea has the triple advantage of road, rail, and river; it is becoming well known to the people, and it is desirable that it should be still more so. Again, a large building, which could, after the Exhibition had terminated, be applied to purposes of instruction and amusement, or even only the latter, would be an immense boon in that quarter of the town; and if the Exhibition of 1861 should yield such a result alone, it would be worth all the time and trouble bestowed upon it.

There can be little doubt, I think, that the managers of another Great Exhibition must of necessity pursue a different course to that followed in 1851. Success must be achieved, in 1861, by appealing to general and not special aid, by dependence more on judgment and less on enthusiasm, in short, by rendering the Exhibition more

popular in its management, and more in accordance with the habits and ideas of the public.

The Society of Arts has the means of obtaining valuable evidence upon the question of site, by sending a circular to the various Literary and Mechanics' Institutions in the neighbourhood of London, requesting each of them to take the subject into consideration, and to report the result, with reasons for the same, to the Society.

The Exhibition of 1851 was a marvellous success—marvellous in more senses than one,—but from the very nature of the difference between a first and second Great Exhibition, the former will be of service to the latter quite as much in the way of warning as of example. This in no way diminishes the honour which belongs to the managers of the former; they had a most difficult, almost impossible, task to perform, and they achieved an extraordinary success; but I believe that the same men, or any other set of men following in their footsteps, could not possibly succeed in repeating the experiment. The managers of the proposed Exhibition of 1861 must not calculate upon that sort of power which forces its way through rocks and over mountains, but upon that more valuable, but less imposing, faculty which teaches how to avoid them; and it seems to me that the first rock a-head is foreshadowed in the recommendation of the *Builder* as regards the site of the proposed Exhibition.

I am, &c.,
T. L. E.

MECHANICS' INSTITUTIONS.

SIR,—If Mechanics' Institutions are ever to accomplish the object for which they were designed, and prove the means of raising the moral and intellectual character of the people, they must receive a more general support from all classes of the community than it would seem has been accorded to them. It is true, that in many places there have been demonstrations of enthusiasm which appeared to leave no doubt of ample success, but unfortunately these ebullitions of popular feeling were too often of a spasmodic character, and from want of that continuous aid which can alone prove of real service, they failed in realising the anticipations which had been formed. On the other hand, it would be as well to guard against forming conclusions too hastily, and refraining from further efforts, because the first favourable promises have apparently been fruitless of results. It would be advisable also to bear in mind, that all the labour of conducting the affairs of an Institution should not be thrown too unsparingly on the willing few, but that each one should consider himself in some degree responsible for a success in which he has or ought to have an interest.

Amongst the topics which might advantageously be discussed on occasions of festive gatherings, to which I alluded in my last, not the least important is to show that all classes are directly concerned in the prosperous working of a Mechanics' Institution. To those who are of an age when knowledge can be best acquired, it ought not to be necessary to insist upon the incalculable advantages which they may gain by devoting their leisure hours to the improvement of their minds, of the many evils which they may thereby avoid, of the great and substantial rewards for their exertions which are placed within their reach, and the simple but expressive fact, that to the great majority there are no other means open to them by which so large an amount of good may be obtained. Though they may never rise out of the sphere in which they are moving, they will be wiser, better, and happier members within it, enjoying the self-consciousness of intelligence and that self-respect which ensures the respect of others.

There are many, however, to whom these arguments may not apply, and yet they are not exempt from the duty of supporting the Institution by their countenance

and subscriptions, because every one, whatever may be his rank in life, has an interest in the social welfare of the community of which he forms a part. Increasing intelligence is ever accompanied by increasing resources, which materially contribute to the well-being of a town and add to the means of enjoyment of all. To tradesmen, therefore, a flourishing Institution is a boon of no mean value; and if their own demands upon it be confined to the use of the library and attendance upon the lectures, they will receive full value for their subscriptions, besides inducing many a young man to grow up into a respectable and useful member of society. The wealthier classes should need no argument to elicit their sympathies and secure that assistance which is of so much consequence, as the amount of subscriptions required is in most cases too small to be any real object to them. By all classes, however, it should be remembered that there is no more effectual aid to the diminution of crime than a well ordered Mechanics' Institution. It removes many sources of temptation; to the idle it offers employment, to the ignorant it offers knowledge, and to aspiring youth a legitimate object of ambition.

No should such Institutions be without the cordial support of the ministers of religion, who can do so much by their influence if they have the will to exercise it. To whom can their exhortations to lead a new life be addressed with such a favourable prospect of receiving attention, as to the intelligent mind which has learnt to think in the Mechanics' Institution. If all that is desired could be accomplished, their ministrations would prove of far more effect than when, as is too often the case, the youthful mind, intent only on self-gratification, is insensible to the appeals which might have saved rash youth from many and irremediable follies.

Let me, therefore, once again press upon all the importance of active and sustained exertions to make Mechanics' Institutes throughout the country all that they ought to be. Much patience may have to be exercised before those for whom they are chiefly intended may be able to appreciate their advantages, but such an obstacle to their usefulness is the most convincing proof of their necessity. Hopeful perseverance will, however, be sure to be ultimately rewarded, and it is to this point that I would more earnestly direct the attention of those who feel discouraged by repeated failures. I could point to several instances where flourishing Institutions now bespeak the triumph of continually renewed efforts, and, I firmly believe that in every English community there is too much latent good sense for such exertions to be wholly without fruits. This truth should be borne in mind not only by managers of existing Institutes, but in places where they do not exist, so that ere long there should be no town or village in Great Britain without such a means of improving its population.

The Society of Arts has lent much valuable assistance, but more use should be made of the columns of its *Journal* to encourage the timid, to strengthen the weak, to inform the ignorant, and, by the interchange of experience, to give value to isolated efforts. Local committees, when they feel themselves in difficulty, should make their wants known to their fellow-labourers in the cause; and when they find that their exertions have been crowned with success, should stimulate others to follow the good example, by making known what they have done. By such means have many of the great interests of the country been raised to their present state of prosperity, and by such means may many of the Mechanics' Institutions be placed on a more satisfactory footing. Those throughout the kingdom should do the same as those in this great county do by the Yorkshire Union. Availing themselves of its organisation, they seek, by unity of action and interchange of experience, to enjoy those advantages which singly, and unaided by mutual support, were unattainable. If, therefore, the *Journal of the Society of Arts* be made not only a record of the proceedings of Institutions, which is too often detailed too briefly, but a medium for cor-

respondence seeking and imparting information, stating difficulties, and assisting to remove them, it may prove a more valuable assistance than it has hitherto done to the labours of local managers. To do this, however, they must look to themselves; they must ask for information when they need it, and their own labours must supply the materials from which Mechanics' Institutions are to be benefited, and their advantages made intelligible to the whole community.

As a concluding hint, let me strongly recommend punctuality in correspondence. When returns are asked for to furnish statistical tables, they should be supplied promptly and surely, and the Secretary of the Society of Arts not be allowed to state, as he has done before, that having sent out above a thousand circulars, he has not received a hundred and fifty replies.

I am, &c.,
BARNETT BLAKE.

Leeds.

Proceedings of Institutions.

BARNESLEY.—In the last report of the Mechanics' Institute and Literary Society, the Committee note an improvement in the financial position of the Institute, notwithstanding a slight decrease in the income from members' subscriptions and donations. The list of members during the past year shows an increase of 15 persons; but, owing to the late financial trouble, some members have left the town, and the subscriptions of others may be withdrawn. The news-room continues to be well-attended, and there is no increase in the cost of that department. The news-room and library have been re-painted during the year, and a new book-case added for the library. The total number of volumes is now 1,430, of which 47 have been purchased, and 40 received from various donors during last year. The circulation of books and periodicals presents only a net increase of 32 volumes; but there is a remarkable and gratifying change in the quality of the works taken out, there being a decrease of 894 volumes of Novels, &c., 154 periodicals, and an increase of 1,145 volumes in reading of a more solid character. The most satisfactory feature in the present balance-sheet is, however, the hall and lecture account, which exhibits a cost of £11 4s. 10d., in 1857, against £41 17s. 10d., in 1856. This large difference arises chiefly from the increased lettings of the hall to the public. The lecture fees are £9 8s. 1d. in excess of the same item for the previous year, to which extent the purchasers of lecture season-tickets and members have been benefited in the quality of the lectures. The following lectures were delivered during the season:—Mr. George Grossmith, of London, “A Humorous Lecture on Lecturing;” Mr. Walter Rowton, of London, on “Comic Literature: an Evening with Charles Dickens;” Mr. Ellis Roberts, of London, harpist, by appointment, to his Royal Highness the Prince of Wales, “A Musical Lecture,” with illustrations on the harp, assisted with the vocal services of Miss Annie Cox; Mr. George Dawson, on “The Improvers of Shakespeare: their Principles, Practices, and Failures;” the Rev. E. Higginson, of Wakefield, on “Good Reading;” Mr. William Kidd, of London, on “Old Heads for Young Shoulders;” Mr. C. Charles, of London, on “Burlesque;” Mr. Hick, of Wakefield, on “The Arctic Regions, an Hour's Entertainment for the Young,” illustrated by dissolving views; Miss Clara Seymour, of London, “A Musical Lecture, illustrative of English Comedy and Ballad Opera;” the Rev. R. Balgarnie, of Scarborough, on “Florence Nightingale;” Mr. Walter Montgomery, of Manchester, on “The Beauties of Shakespeare and other Poets.” In addition to these, the members had free admission to two lectures on Palaeontology, for which they were indebted to gentlemen in the town, members, and others,

who privately subscribed the sum of £10 10s. for Mr. Hawkins's fees. To these gentlemen the thanks of the Committee are gratefully tendered. Another lecture on India, by the Rev. Canon Trevor, is also to be added to the list. The members of the Institute for the past year were as follows:—£1 annual subscribers, 6; 15s. ditto, 7; 10s. ditto, 201; 6s., ladies, 28; 6s., youths under 18, 30; 6s., country members, 11; total, 283.

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[From *Gazette*, Sept. 3, 1858.]

Dated 22nd April, 1858.

890. P. E. Aimont, Paris—Imp. in railway indicating and signalling apparatus.

Dated 20th July, 1858.

1636. R. Clarke, Cwibran, near Newport, Monmouthshire—Imp. in windows, window blinds, and shutters.

1642. W. Asquith and J. Asquith, Leeds—Ornamenting the surfaces of raised pile fabrics, and in the apparatus employed therein.

Dated 24th July, 1858.

1668. W. Merry, 9, Park-place-villas, Paddington—Imp. in apparatus for preventing the escape of foul air from area, kitchen, and scullery drains of dwelling-houses, also from street, stable, and slaughter-house drains.

Dated 5th August, 1858.

1776. J. Luis, 18, Welbeck-street, Cavendish-square—A new system of truss. (A com.)

1780. W. Moseley, 17 and 18, New street, Covent-garden, and W. S. Champness, Clapham—An improved self-filling reservoir penholder.

1782. J. Henderson, Laswade, Mid-Lothian, N.B.—Imp. in machinery for weaving plain or figured fabrics.

1784. C. Mather, Salford Iron Works, Manchester—Imp. in shearing machines.

1786. W. Clay, Liverpool—An improved mode of manufacturing cast steel and wrought iron into ingots and other forms.

1788. A. V. Newton, 66, Chancery-lane—Imp. in the manufacture of lace. (A com.)

Dated 6th August, 1858.

1792. F. H. Stubbs, Leeds—An improved mode of communicating between the guard and engine-man on locomotives or railway trains.

1794. S. Carey, Clink-street Wharf, Bank-side, Southwark—An improved system of forming the permanent way of railroad transit, also common tramway, and channel or watercourse, by the means of cast-iron plates or boxes peculiarly constructed, so as to make one continuous way or channel.

Dated 7th August, 1858.

1796. G. P. Lock, Liverpool—Imp. in the composition of paints for coating iron ships, and for other useful purposes.

1798. J. Webster, Birmingham—A new or improved metallic alloy.

1802. J. Imray, 65, Bridge-road, Lambeth—Imp. in apparatus used in printing.

1804. J. Walker, Glasgow—Imp. in machinery or apparatus for moulding or shaping metals.

1806. A. V. Newton, 66, Chancery-lane—Imp. in pianofortes. (A com.)

Dated 9th August, 1858.

1808. J. J. Murphy, Belfast—Imp. in the construction of floating bodies, and in the means of supporting floating structures.

1810. H. Clayton, Atlas Works, Upper Park-place, Dorset-square—Imp. in machinery for manufacturing bricks and tiles, and other articles of brick, earth, clay, or other plastic material.

1812. T. G. Messenger, High-street, Loughborough—Imp. in the manufacture of garden engines, which are also applicable to fire or other engines.

1814. W. E. Newton, 66, Chancery-lane—An improved method of arranging and applying magnets to counteract or compensate for the effects of local attraction on the mariner's compass. (A com.)

1816. W. Spence, 60, Chancery-lane—The precipitation of purple colouring matter by chloride of calcium. (A com.)

Dated 10th August, 1858.

1818. A. Barchou, 49, St. Augustin's road, Camden-town—Imp. in the mode of fastening the soles and heels of boots and shoes. (A com.)

1822. M. Moses, Portsdown-road, Maida-hill—Imp. applicable to umbrellas and parasol sticks.

1826. R. C. Gist, 36, Cannon-street—Imp. in knitting machines. (A com.)

1828. J. G. Appold, Wilson-street, Finsbury-square—Imp. in the manufacture of wire ropes or cables.

1830. E. Tamberlick, Rue du Commerce, Quartier Leopold, Brussels—Imp. in apparatus used for exhibiting advertisements. (A com.)

Dated 12th August, 1858.

1832. W. Knowles, Bolton-le-Moors, Lancashire—Imp. in certain parts of machinery used in preparing and spinning cotton and other fibrous materials.
 1834. G. Houghton, Birmingham—An imp. or imps. in saddles.
 1838. R. Baxendale, Manchester—Imp. in brushes, mops, or apparatus for washing and cleaning.
 1840. R. Jobson, Wordsley, Staffordshire—Imp. in apparatus used when making moulds for casting shells and other articles.
 1842. R. Jobson, Wordsley, Staffordshire—Imp. in apparatus for supplying water to axle-tree boxes and other journal bearings to lubricate the same.
 1844. R. Jobson, Wordsley, Staffordshire—Imp. in apparatus for crushing and sifting.

Dated 13th August, 1858.

1846. L. Autra, Wardour-street—Improved apparatus for exhibiting advertisements.
 1848. C. L. Light, Pall mall East—Imp. in electric telegraph ropes or cables.
 1850. J. Petrie, jun., Rochdale—Imp. in machinery or apparatus for stretching and drying woven fabrics.
 1852. G. Schaub, Birmingham—New or improved machinery to be used in the manufacture of certain kinds of printing types, and also in the manufacture of spaces and quadrats used in setting up printing types.

Dated 14th August, 1858.

1860. S. C. Lister and J. Warburton, Manningham, Yorkshire—Imp. in dyeing wool, hair, cotton, flax, and similar materials, also yarns and textile fabrics made from such materials, also in dyeing and tanning other substances and materials, also in washing wool, and in discharging the gum from silk.

Dated 16th August, 1858.

1865. G. K. Geyelin, London—Folding bedsteads, and which he calls the Universal and Folding Joint for bedsteads.
 1866. P. E. Chappuis, 69, Fleet street—Imp. in stereoscopes and stereoscopic apparatus.
 1867. C. G. Cutchey, 15, Portland-cottages, Forest Hill—A railway danger-signal-whistle.
 1868. L. A. Herrmann and E. I. E. Herrmann, Paris—Imp. in connecting together pipes, tubes, or ways for the conveyance of water or other fluid, and in means or apparatus for regulating the flow or discharge, and supply of such fluids, and in means or apparatus for facilitating the forming of such connections.
 1869. A. V. Newton, 68, Chancery-lane—Certain imp. in machinery for forging horse-shoes. (A com.)

Dated 17th August, 1858.

1871. J. Webster, Birmingham—A new or improved projectile.
 1872. W. E. Evans, Norfolk-street, Sheffield—Imp. in harmoniums, concertinas, organs, and other similar keyed instruments.
 1873. J. Jackson and A. Fisher, Highfield Steel Works, Sheffield—An imp. in the manufacture of hats.
 1874. G. Walkerston, Fife, N.B.—Imp. in mangles.
 1875. J. Norton, Rosherston, Kent—Imp. in projectiles.
 1876. F. Shaw, Siddlewood-road, Derby—Imp. in spindles for the spinning of silk and other fibrous material.
 1877. G. Mills, 5, St. George's-terrace, Queen's-road, Regent's-park—Imp. in machinery for cutting wood for staves.
 1878. D. Lichtenstadt, Surrey-square, Old Kent-road, and C. Duff, Hill-street, Peckham—Imp. in treating tan and tanning refuse to obtain valuable products therefrom. (A com.)

Dated 18th August, 1858.

1879. J. Luis, 11, Welbeck-street, Cavendish-square—A new safety system for preventing an accidental discharge in fire-arms. (A com.)
 1881. W. Sociman, 3, Bennett-street, Middlesex—Additional imp. in the construction of propellers, chiefly with reference to my former patent, dated 20th August, 1855.
 1882. T. Williams, Aberdaron, Caernarvon—An apparatus to be used for a churn or for a washing machine.
 1883. R. Anderson, Black Braes, Stirling, N.B.—Imp. in stuffing boxes and packings.
 1884. T. O. Duke, Kensington—Imp. in preparing cheques and such like documents, and in the means of preventing forgery or surreptitious alterations.

Dated 19th August, 1858.

1885. A. Pilbeam, 2, Lonsdale-place, Notting-hill—A bradawl-screw.
 1886. W. Hudson, Burnley, Lancashire, and C. Catlow, of Clitheroe, in the same county, for the invention of certain imp. in looms for weaving.
 1887. W. F. Padwick, Hayling Island, Hants—A machine or implement to be employed on land sown with turnips, to protect them from the ravages of the fly, applicable also to the protection of other crops.
 1888. J. C. Flomley, Maidstone—An imp. in joists and laths used for supporting hair and other porous floors in east-houses.
 1889. M. F. J. Delfosse, Regent-street—Imp. in electro-magnetic machines.

1890. W. Smith, 18, Salisbury-street, Strand—Imp. in steam engines. (A com.)

Dated 20th August, 1858.

1891. W. Pearce, Bri-tol—Imp. in the manufacture of air-tight bottles, jars, or similar articles.
 1892. W. A. Munn, Throwley House, near Faversham—An improved method of constructing railway carriages, whereby greater safety is insured in case of collision.
 1893. F. Preston and W. McGregor, Manchester—Imp. in machinery for cutting files.
 1894. H. Hood, Leeds Iron Works, Leeds—Imp. in the manufacture of railway tyre-bars, boiler plates, bar iron, and forgings.
 1895. L. F. H. Droonet, Paris—Imp. in bearings and packings for rotating and reciprocating shafts, and joints of pipes, and other like purposes.
 1896. P. Spence, Pendleton, Lancashire—Imp. in the manufacture of alum.
 1897. J. L. Fliggett, Missionary-place, Walworth—An improved construction of syringe or hand pump.
 1898. W. Clay, Liverpool, and E. L. Benzon, Sheffield—Imp. in the manufacture of iron and steel.
 1899. T. Knowles, Gomersal, Yorkshire—Imp. in looms for weaving. (A com.)

Dated 21st August, 1858.

1901. F. F. Delphy, Paris—Imp. or imps. in metallic stay buses.
 1905. W. Henson, Saint Just, France—Imp. in circular looms, or knitting frames.
 1907. R. Laming, Hayward's Heath, Sussex—Imp. in purifying gases and liquids, in preparing purifying liquids, and in apparatus for apportioning measuring liquids.

Dated 23rd August, 1858.

1909. F. Puls, Roxburgh-terrace, Ilaverstock-hill—Imp. in the distillation of coal.
 1911. M. R. Plon, United States—Imp. in the manufacture and construction of fire arms, and in means of loading the same.
 1913. L. Higgins, Jersey City, and A. Brown, New York, America—Imp. in reeling the sails of navigable vessels.
 1915. T. Averill, Birmingham—An imp. or imps. in mills for grinding. (A com.)
 1917. J. H. Robinson, Clement's-court—An improved shirt.
 1919. A. Rottmann, Lawrence-lane—Imp. in fastenings for bags, portemoneaux, pocket books, and similar articles. (A com.)

Dated 24th August, 1858.

1921. H. B. Barlow, Manchester—Imp. in self-acting lubricators. (A com.)
 1923. H. Wilson, Watling-street—Imp. in the mounting of hand saws.
 1925. J. Biggs, Leicester—Imp. in the manufacture of caps, resembling in form the Turkish fez.

INVENTION WITH COMPLETE SPECIFICATION FILED.

1971. M. A. F. Mennons, 39, Rue de l'Échiquier, Paris—Imp. in the supports of rails for railways. (A com.)—31st August, 1858.
 1977. J. H. Johnson, 47, Lincoln's-inn-fields—Imp. in the prevention of steam boiler explosions. (A com.)—31st August, 1858.

WEEKLY LIST OF PATENTS SEALED.*September 1st.*

415. E. H. C. Monckton.
 418. G. and J. Kirkley.
 423. W. H. Gravely.
 425. G. A. Bidell.
 434. P. Moore.
 399. II. G. Collins.
 445. C. F. Parsons.
 447. C. R. Meate.
 451. J. S. Nibbs and J. Hinks.
 452. Comte C. Cavalli de St. Germain.
 455. E. Burke.
 464. J. H. M. Maissiat.
 467. T. Lyne.

*472. W. Clark.**502. W. Pearson.**514. J. Jameson.**570. J. M. May.**990. W. H. Morrison.**1068. J. West.**1112. H. Walker.**1380. B. Atwater.**September 3rd.**484. W. Harding.**486. G. S. Andrews.**495. F. E. D. Hast.**497. J. Worrall and C. Race.**499. J. Warburton.**508. J. T. Couper.***PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.***August 31st.*

1975. F. C. Calvert.
 September 2nd.

1988. W. H. Zahn.
 2009. G. Collier.

*September 3rd.**1995. C. and J. Clark.**1998. W. H. James.**1999. T. T. Coniam.**2011. J. H. Glassford.*

ERRATUM.—In last week's *Journal*, for "2032. R. B. Feather," read "2232. F. C. Lepay."

WEEKLY LIST OF DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

| No. in the Register. | Date of Registration. | Title. | Proprietors' Name. | Address |
|----------------------|-----------------------|----------------------|--------------------|--------------------------------------|
| 4116 | August 30. | Improved Braces..... | G. Barnes | 9, New-court, Goswell-street. |
| 4117 | , 30. | Church Hassock | A. Browne..... | Grove Villa, Compton, near Plymouth. |